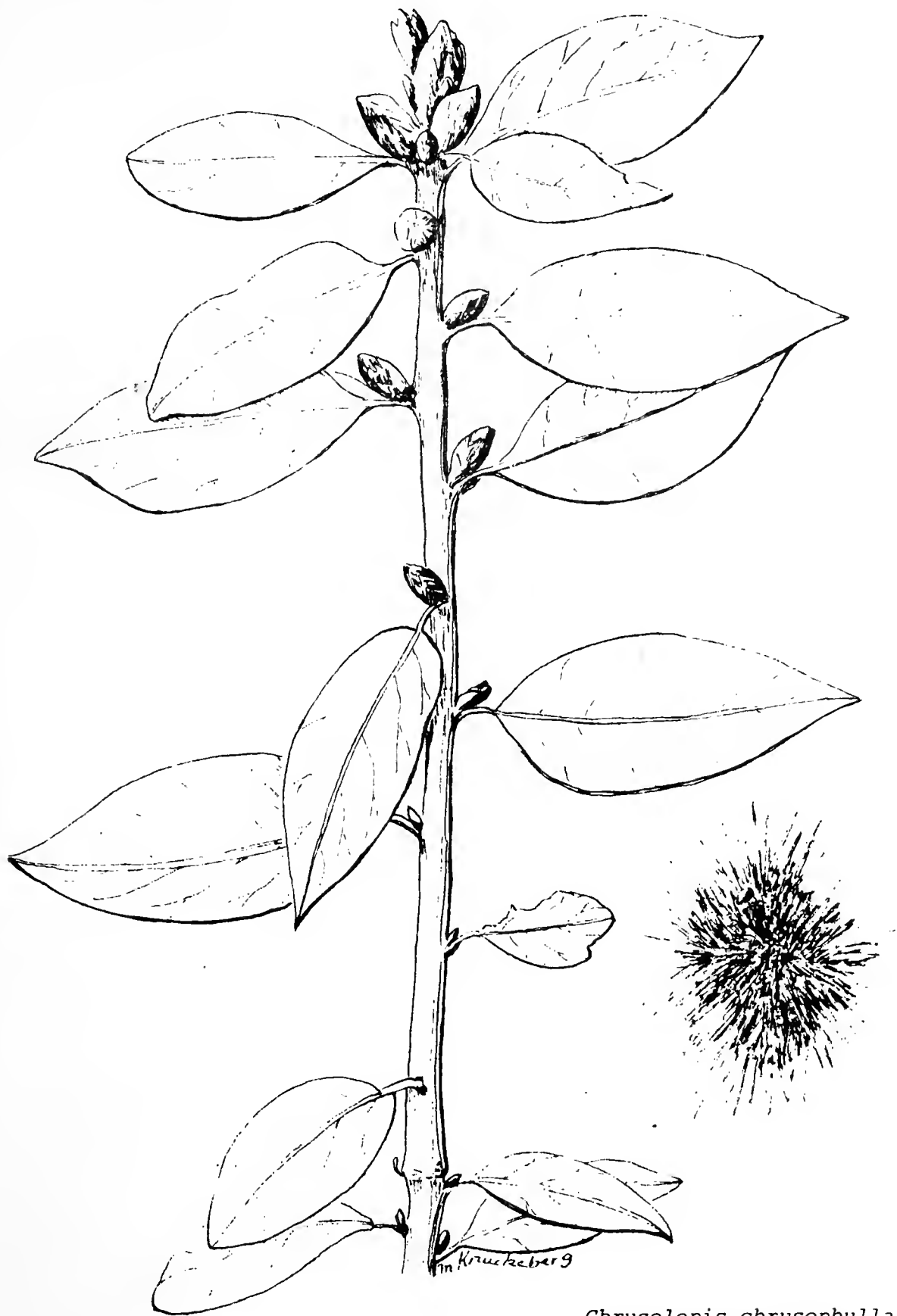


Horticulture Northwest

Journal of the Northwest Ornamental Horticultural Society



Chrysolepis chrysophylla (Page 17)
Illustration: Mareen S. Kruckeberg

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Horticulture Northwest

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Golden Chinquapin

A Portrait of a Native

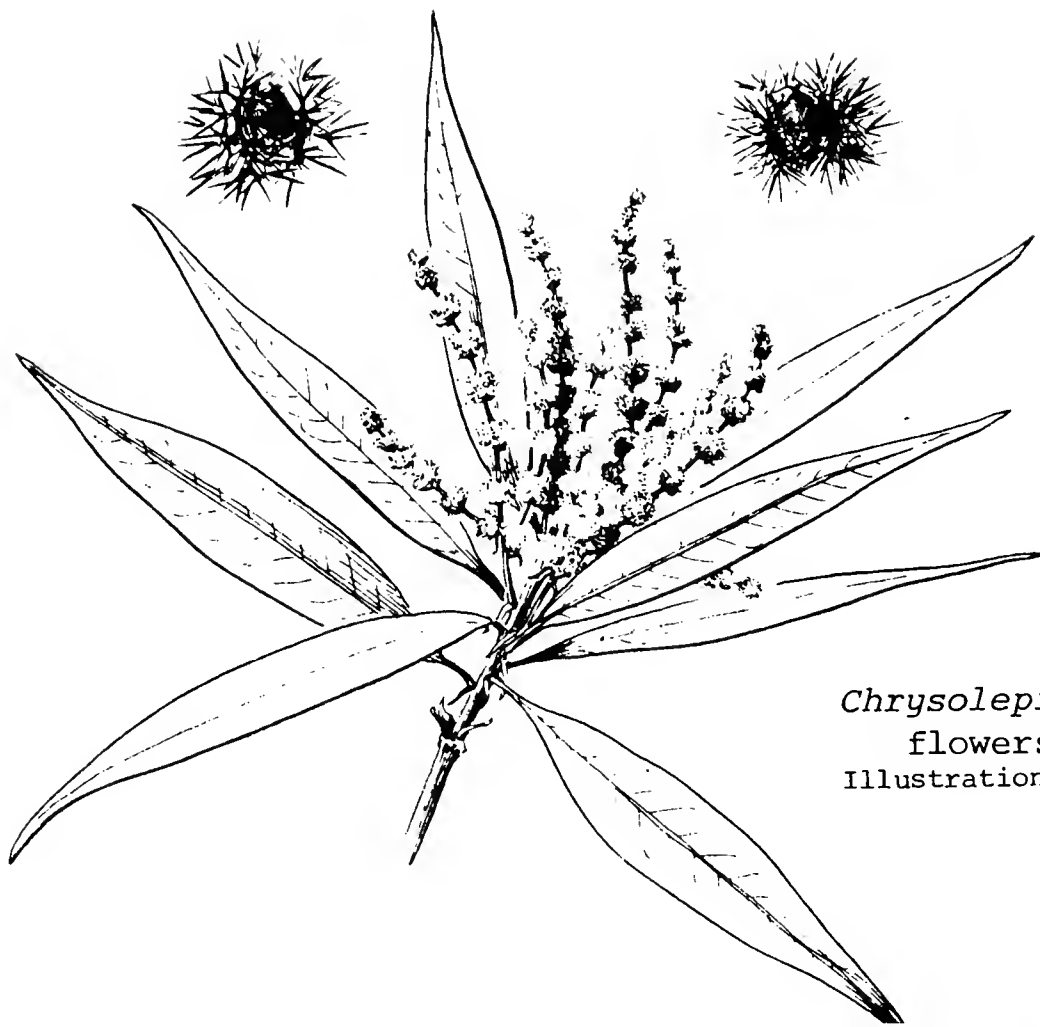
A. R. Kruckeberg

Chairman, Botany Department, University of Washington
Seattle, Washington

The Puget Sound and Willamette Valley country of the Pacific Northwest provides some of the most hospitable growing conditions for ornamentals anywhere in the temperate regions of the world. It is no wonder then, that exotic plants of even the most moderate hardiness are sought after and grow exuberantly in the area - they find our land like their homelands. But this quest for the unusual from faraway countries too often preoccupies the gardener, to the exclusion of some fine plants native to our own corner of the world. The golden chinquapin is one such native of exceptional garden quality. This small broad-leafed evergreen shrub or small tree, known botanically as *Chrysolepis chrysophylla* is a little-known member of the Oak Family (*Fagaceae*), with close affinities to the edible deciduous chestnut (*Castanea*).

Although rarely grown, fine specimens of golden chinquapin can be found in collector's gardens here and in Europe. It can be recognized by two close-up key features, its foliage and its flowers and fruits. At a distance, its lustrous dark green foliage in dense array will remind one of *Quercus ilex* or a narrow-leaved cultivar of *Ilex aquifolium*. In the garden, the shrubby silhouette is oval or conical, with foliage right to the ground. But in the wild, golden chinquapin can be a substantial tree, growing in the open understory of a dryish Douglas fir forest. Here it may reach heights of up to 75 or 100 feet, with a somewhat narrowly oval crown of dark-green, lance-shaped (lanceolate) leaves. Mature specimens may have a clear trunk up to 20-40 feet from ground level; the bark on such specimens is a striking mottled gray. But back to the two key features. The telling mark of the 2-4 inch long leaves is the under-surface - a soft golden sheen caused by its coating of innumerable tiny scales. Although the leaves in midsummer may resemble at a distance those of the native Scouler's willow (*Salix scouleriana*) golden chinquapin leaves are more leathery in texture due to their evergreen habit; and the ever present golden cast on the undersurface is the 'give-away' hallmark of the tree.

The second key feature, flowers and fruit, when added to the golden sheen makes golden chinquapin unmistakable. Like its deciduous relative, chestnut (*Castanea*), golden chinquapin produces flowers of two sexes: male flowers in one to two inch long erect spikes of tiny cream-white flowerlets - each barely more than a cluster of pollen-producing stamens. The female flowers develop at the base of the adjacent male catkins; when well along to maturity they will have formed the singular and distinctive "bur" so familiar to us in the true chestnut. Each spiny fruit encloses three small brownish nuts, considered to be edible. But the nuts are not all that accessible! The bur that contains them is a husk covered with many branched and slender spines, formidable to squirrels and humans alike.



Chrysolepis chrysophylla
flowers and fruit
Illustration: Jeanne R. Janish

Golden chinquapin likes a garden setting that is neither too sunny nor too shady; morning sun at the edge of a woodland suits it, where its roots can reach into a light, well-drained but moderately moist soil. In the wild it seems to grow best where the surrounding conifers are not too close to rob it of its place in the sun. In our garden it is remarkably free of pests; not even the most vexing strawberry root weevil touches it. Yet there is the possible danger of fungus infection from wild plants, as will be mentioned shortly.

Propagation of golden chinquapin is probably the greatest deterrent to its becoming more widely available. Like other members of the Oak family, *Chrysolepis chrysophylla* is difficult to root from cuttings. Mist propagation with a strong-acting rooting compound can yield a low percentage of rooted cuttings. Like oaks, growing chinquapins from seed is a much more certain affair - if the seed is sown right after fall harvest. Beating the squirrels and jays, as well as overcoming the vagaries of a seed crop in a given harvest year adds more of a challenge to getting this fine evergreen into nurseries and gardens. Carl English and his associate, Walter Lyons, have had middling success from seed. Fresh seed should be sown in deep boxes or large pots plunged in a holding bed; the medium of a well-drained 1:1 mix of loam and peat (or oak leaf mold) works well for chinquapin as well as oak seeds. Germination takes about two weeks.

The native golden chinquapin ranges through the Pacific Coast states from northern California to western Washington. It is usually a low-elevation species, growing in mixed conifer forests west of the Cascade or Sierra summits. While it is frequently encountered in the western Cascade foothills and Coast Ranges of Oregon, it is exceedingly rare in Washington. Recently, colonies have been verified on the west side of Hood Canal near the Hamma Hamma River in Mason County. Another colony near North Bonneville in Skamania County has not been

relocated since 1904; it is probably extinct there. Recently a small colony has been found not far from the Columbia River, at the southwestern edge of the Lava Beds, also in Skamania County. Rarity in Washington is of special botanical interest. Golden chinquapin is at the northern edge of its range here - and at the limits of its environmental tolerance in the wild. Efforts must be made to preserve these northern outposts of the species range, for they undoubtedly represent germ plasm distinct from populations to the south. Unfortunately the fate of these northern outliers is not at all certain. Logging roads and other development are destined to further reduce the outlier populations unless they are given deliberate and managed protection; this is the goal of the Washington Native Plant Society. But another threat exists. Some small family groups of chinquapins in the Hamma Hamma drainage, visited in 1976, were almost completely defoliated in mid June. The leaves, living or dead, were covered with black pockmarks, which turned out to be a fungus disease (probably *Didymella* sp., an ascomycete fungus relative of the chestnut blight). Fortunately, other colonies well isolated from these diseased ones appear to be healthy, and even responding well to the selective logging of Douglas fir (clearcutting would be disastrous!)

Though rare in Washington, just across the Columbia River on the Oregon side, golden chinquapin is rather common. It can be seen on the lower slopes of Mount Hood, especially frequent around Rhododendron and Zigzag in Clackamas County, and then on the Mount Hood loop road north of Barlow Pass to Hood River. Why it is so common on the Oregon side of the river and so rare on the north shore in Washington is a total mystery!

I first learned golden chinquapin under its long-established botanical name, *Castanopsis chrysophylla*. This name was an easy reminder of its affinity to *Castanea* ("castan - oopsis" = "like *Castanea*"). But the new generic name, *Chrysolepis*, is founded on sound taxonomic judgment. Botanists now separate the chinquapins into two genera; the former name of our plant, *Castanopsis*, is now reserved for more tropical species with unisexual spikes, while the new name takes up the more temperate zone species of Asia and North America, to embrace our own native golden chinquapin.

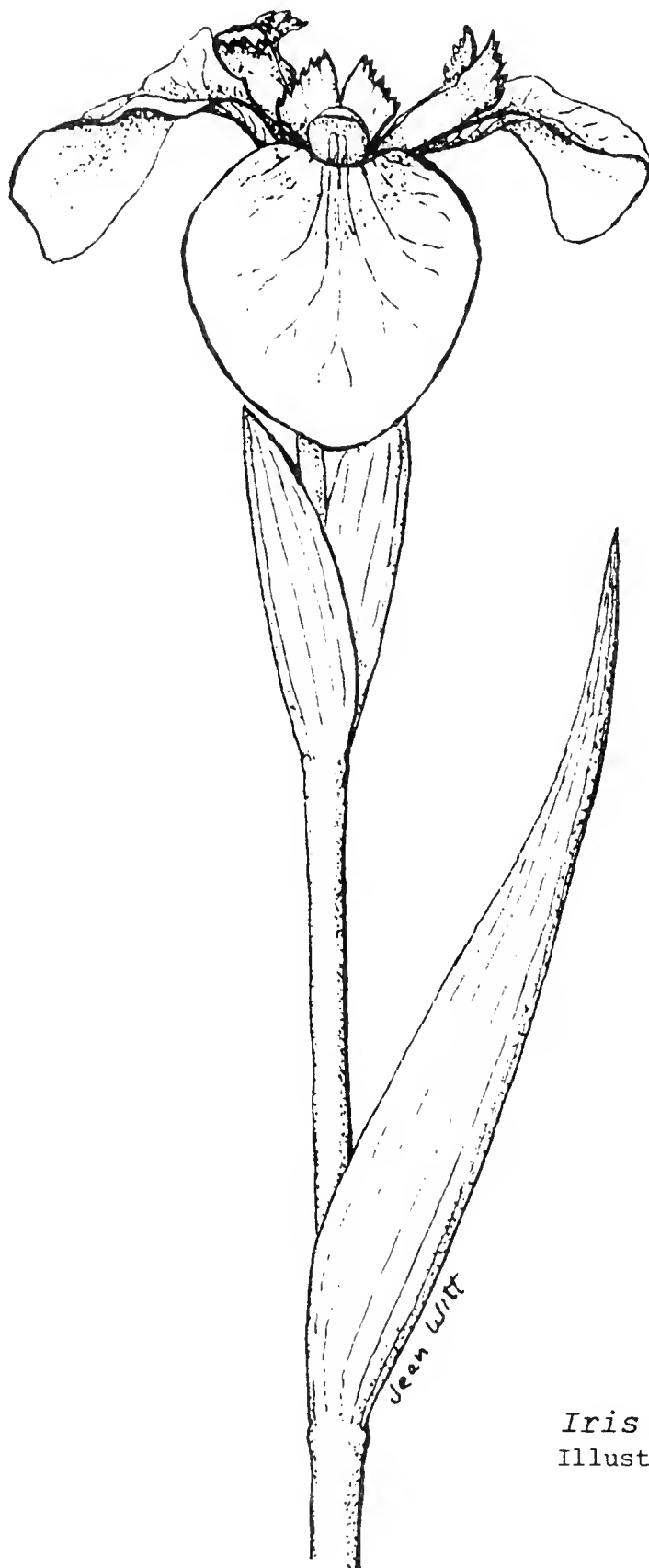
One other species occurs in western North America. *Chrysolepis sempervirens* is a large, broad shrub of dense foliage occurring at higher elevations in the Sierra Nevada Range of California, north to the Siskiyou Mts. in Oregon. Its smaller leaves are yellowish gray-green above, but with the same golden sheen beneath. Moreover it has the same pollen-bearing spikes and seed burs as its lowland relative. *C. sempervirens*, though even more rare in cultivation, deserves to be more widely grown. It is a lovely, bold evergreen that thrives in full sun. Though it may look like a densely leaved *Rhododendron* in the Triflorum Series, the tell-tale flowers and fruits will correct an initial impression.

For those wanting to know more about these two fine native evergreens of high ornamental value, a good beginning can be with the limited literature. W. J. Bean's Trees and Shrubs Hardy in the British Isles (Vol. 1, pp. 612-614) has an extensive account. Then Sudworth's Forest Trees of the Pacific Slope is a good guide to the natural distribution of the plant. A new Forest Service publication, Seeds of Woody Plants in The United States (USDA Agriculture Handbook No. 450, 1974), has the last word on seed collecting, storage and

germination. To see golden chinquapin in the wild, the surest places are in the Mount Hood area east of Portland, Oregon, along the upper reaches of the Sandy and Zigzag Rivers.

We can hope that by increasing familiarity with golden chinquapin, it will become more widely planted in the Pacific Northwest gardens. By judicious and conservation-minded propagation practices, the plant can become a part of the garden scene without suffering by attrition in the wild.

Illustration reprinted by permission of the University of Washington Press from Vascular Plants of the Pacific Northwest by C. Lee Hitchcock, et al.



Iris setosa

Illustration: Jean G. Witt

IRIS SETOSA

Jean G. Witt

Jean Witt graduated in Botany from Washington State University and is active in the American Iris Society.

Iris setosa, the Alaska wild iris, or Northern blue flag, is a pleasant addition to June's parade of *Iris* species. An inhabitant of wet meadows and seashores, it is found in northeastern Asia, northern Japan, the Aleutians, central and southeastern Alaska and along the east coast of North America from Labrador to Maine; continental glaciation may well have caused its absence from northern Canada. Along with the similar *I. tridentata* from southeastern United States it belongs to series *Tripetalae* of the *Apogon* or beardless subsection within the genus *Iris*. As both series and species name attest, these iris are unique in appearing to have only a single set of perianth segments. The outer set--known as "falls" in iris--are large and pendent; the inner, erect "standards", usually nearly as large, are in this case reduced to mere half-inch bristles or "setae", almost invisible between the falls. Arched petaloid style-arms complete the flower. The plants resemble those of *I. ensata* (*I. kaempferi*), the Japanese iris, forming large clumps of deciduous, ensiform foliage, the rhizomes furry with the remains of old leaf bases. In the taller forms, flower stems rise to about two feet, with several branches and six or more flower followed by blimpy, thin-walled pods. Leaf bases and floral bracts are often tinged with purple. Foliage is considered poisonous and can cause dermatitis in sensitive individuals.

In Anchorage and other parts of Alaska *Iris setosa* is grown in lieu of the common bearded type, and white and pinkish forms have been found in the wild, but until quite recently it seems to have been represented beyond its homelands only by rather dowdy color forms of no great merit. In the early 1960's the chance purchase of a packet of seed (put out by Baldwin Seed Co., dealers in Alaska wild flower seeds) at a local variety store gave me a row of seedlings with tall stems and large ruffled medium blue flowers prominently marked in white and yellow, a far cry from the "dull leaden purple" described in the literature. This original group soon became mixed with a similar strain raised from seed collected by Sallie Allen in the Ketchikan area. Seeds of this handsome 'Alaska blue' form were subsequently distributed by the American Iris Society's Seed Exchange and have done much to increase the popularity of this species.

Plants of *Iris setosa* are now available from species *Iris* specialists in a number of sizes and color-forms. These include an extremely vigorous violet-flowered clone from Japan known as 'Kirigamine', which is sterile and said to be triploid, this can be seen growing in profusion along the stream in the south end of the Arboretum's Japanese garden. Another deep violet, much more slender, comes from the Amur River region in Siberia. Roy Davidson came across a white-flowered form in a small nursery in Japan; this is proving to be a good grower and will soon be available commercially. Dwarf forms from

eastern Canada are known as *I. hookeri* or *I. setosa* ssp. *canadensis*; those in commerce vary in height from eight to fifteen inches. Their flowers are a soft almost mousy gray-blue, veined darker, and some clones tend toward six-petalled doubles. This type has done very well in the wet clayey soil of the rock wall behind the greenhouses at the Arboretum.

Variations which do not seem to be in commerce at present are *Iris setosa* f. *platyrhyncha* which has large petaloid standards instead of the usual small bristles, and is said to be of random occurrence within certain populations in Alaska; and ssp. *interior*, which has rather scarious spathes instead of green fleshy ones. Visitors to Alaska might do well to look for these as well as for white or pink forms, with the idea of collecting seeds.

Iris setosa comes very easily from seed and self sows extensively in my garden. Superior clones are propagated by rhizome divisions, and early spring is probably a better time than fall, since the plant is deciduous. Some plants seem naturally shortlived, but this is offset by their ready seeding. They thrive in almost any sunny location in western Washington if soil is well watered and reasonably fertile. They have also proved successful at Yakima, but have not done well in the limestone-based soils at Bozeman, Montana.

Besides the species itself, one interesting hybrid is grown in our area, a cross between the yellow *Iris tenax* f. *gormanii* and the half-inch stubs of *I. setosa*. Clumps are very floriferous and attractive, but so resent division that the plant seems unlikely to become a commercial item.

Botanists consider that *Iris versicolor*, the eastern blue flag, represents an ancient hybrid which occurred between *I. setosa* and *I. virginiana*, when their ranges overlapped in glacial times. It too is intermediate between the two parental species. Iris buffs are trying to recreate these crosses and others, in the hope of developing even better garden forms.

PEAR TREES

Our old pear trees their beauty show
When winter dresses them with snow.
In April they're a dazzling sight
As fragrant buds burst into white;
And after the spring shower's gone
They scatter snowflakes on the lawn.

M.W.B.





Pacific Northwest Asters

Dennis Thompson

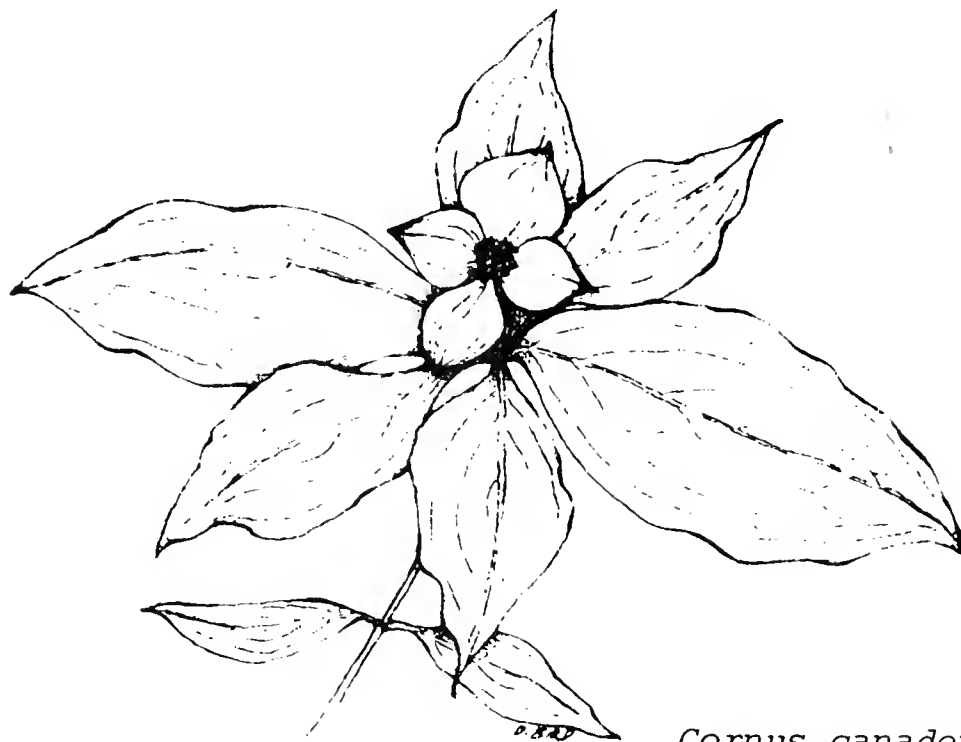
Dennis Thompson has been an instructor of horticulture at Edmonds Community College for 3 years and is currently completing his master's thesis on northwest native asters.

Often the intermediate flowering plants are overlooked in favor of trees and shrubs which present a monumental structure, or, on the other hand, they are bypassed for the tiny rock plants that are the gems and treasures of a collection. *Aster ledophyllus*, the Cascade aster, is one of these overlooked perennials. During the growing season it produces rather ordinary growth with leafy stems up to four feet in height. The purple flowers in the autumn, however, are decidedly attractive. It probably performs best in a relatively poor well-drained soil, as does the closely related *A. paucicapitatus*, the Olympic aster. Both want a sunny exposure.

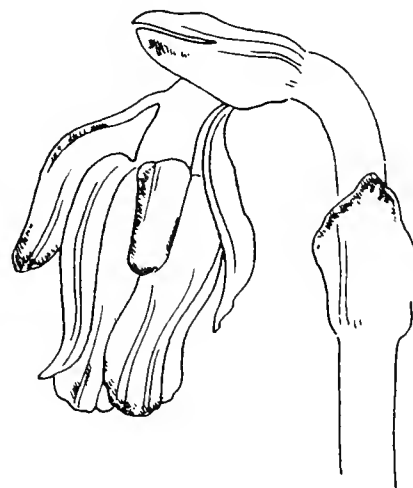
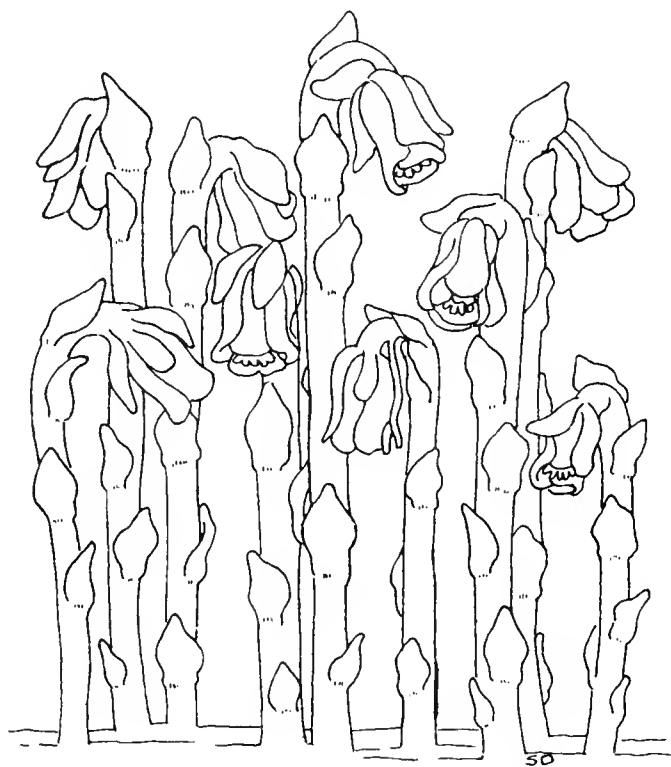
The Olympic aster is a smaller-scaled garden aster, reaching two feet in height. *Aster paucicapitatus* (roll that around your tongue--it's fun!) is a large white daisy with a center of yellow disc-petals that age through orange to red. The most exciting of these Northwest native asters, however, is a talus dweller from the Mt. Jefferson area in the Oregon Cascades. Originally called *A. gormanii*, it appears to be a dwarfed *A. paucicapitatus* that forms dense mats six inches tall. In the wild it rapidly hybridizes with *A. ledophyllus*, producing delightful offspring of white, pink, lavender, rose purple, and purple. Because of this promiscuous tendency, however, the already rare pure form may soon be extinct.

In cultivation both *Aster gormanii* and its hybrids seem amazingly sturdy to be occupying such a limited niche in nature. I've grown the plants in pots for up to three years, forcing them to flower twice each year. Planted out in my Seattle gardens they survived blue clay in Montlake, growing in the top edge of an east-facing rockery; they then were happier in a new home in a sandy flat planting strip near Woodland Park. They even survived a final year in a wooden flat in Richmond Gardens, before being planted into sandy soil again. Alas, even the heartiest pioneer will survive only so much punishment--they looked heavenward and died without flowering further.

Thus, last summer found me on another trip to Oregon, and my garden for 1977 will have a new and slightly wider selection of these delightful stem-rooting daisies.



Cornus canadensis
Illustration: Dorothy Bird



Monotropa uniflora
Illustration: Sally Dickman

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YARROW GARDEN CLUB

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COMING GARDEN EVENTS

- June 15 Annual Fern Sale featuring "Hardy Ferns"
Sponsored by: N.O.H.S.
10:00 AM - 6:00 PM,
Bellevue Square, Bellevue
- June 18 Rose Show
Sponsored by: Fort Vancouver Rose Society
1:00 to 8:00 PM, Admission 25¢
Clark College Auditorium, Vancouver, Washington
- June 18 Rose Show
& 19 Sponsored by: Seattle Rose Society, Admission 50¢
18th - 1:30 PM - 9:00 PM; 19th - 11:00 AM - 8:00 PM
Scottish Rite Temple, 1155 Broadway E., Seattle
- June 24 Rose Show
& 25 Sponsored by: Spokane Rose Society and the
American Rose Society, Pacific Northwest District
24th - 1:00 PM - 9:00 PM; 25th - 9:00 AM - 2:30 PM
Davenport Hotel, Spokane
- July 2 Rose Show
& 3 Sponsored by: Tacoma Rose Society
2nd - 12:30 PM - 7:00 PM; 3rd - 9:00 AM - 5:00 PM
First Baptist Church, 9th Ave. & Market St., Tacoma
- July 9 Rose Show, 29th Annual Show
Sponsored by: Valley Rose Society
1:00 PM - 8:00 PM
St. Stephen Church, 13055 S.E. 192nd, Renton
- July 9 Rose Show
& 10 Sponsored by: Lewis County Rose Society
Lewis County Fairgrounds, Centralia
- July 14 "Flower Arranging for Your Home"
Sponsored by N.O.H.S.
12:00 Noon Monthly Program Meeting
11:30 - Displays, Exhibits, Other Horticultural Activities
Coffee Available
Pacific Science Center, Eames Theater, Seattle
- July 23 Miniature Rose Show
Sponsored by: Evergreen Rose Society
St. Alban's Episcopal Church
21405 - 82nd Place W., Edmonds
- Aug. 5, Begonia and Fuchsia Show
6 & 7 Sponsored by: Seattle Begonia Society
5th - 9:30 AM - 9:30 PM; 6th - 9:30 AM - 6:00 PM
7th - 12:00 - 5:00 PM
Northgate Mall, Highway I-5 & N.E. 110th St., Seattle
- Aug. 11 "Fuchsias for Enjoyment"
Sponsored by N.O.H.S.
12:00 Noon Monthly Program Meeting
11:30 - View Displays, coffee available
Pacific Science Center, Eames Theater, Seattle
- Aug. 12 Begonia & Fuchsia Show
13 & 14 Sponsored by: Eastside Begonia Society
12th - 1:00 PM - 9:00 PM; 13th - 10:00 AM - 7:00 PM
14th - 10:00 AM - 6:00 PM
Bellevue Square, Bellevue

- Aug. 13 Fuchsia Show
& 14 Sponsored by: Puget Sound Fuchsia Society
13th & 14th - 10:00 AM - 8:00 PM
Pacific Science Center Garden. Admission 35¢
- Aug. 20 Dahlia Show
& 21 Sponsored by: Kitsap County Dahlia Society
Eastside Masonic Temple, 11th and Terry Ave.
Bremerton
- Aug. 20 Dahlia Show
& 21 Sponsored by: Snohomish County Dahlia Society
20th - 4:00 PM - 8:00 PM; 21st - 10:00 AM - 6:00 PM
Forest Park Floral Hall, Everett
- Aug. 27 Dahlia Show
& 28 Sponsored by: Washington State Dahlia Society
27th - 2:00 PM - 9:00 PM; 28th - 10:00 AM - 7:00 PM
Pacific Lutheran University Student Union Building
S. 121st & Park Ave. S., Tacoma
- Aug. 27 Dahlia Show
& 28 Sponsored by: Seattle Dahlia Society
27th - 12:00 - 6:00 PM; 28th - 12:00 - 5:00 PM
Northgate Mall, Highway I-5 & N.E. 110th St., Seattle
- Aug. 26 Fuchsia Show
27 & 28 Sponsored by: Greater Seattle Fuchsia Society
26th - 12:00 - 6:00 PM; 27th - 9:30 AM - 6:00 PM
28th - 12:00 - 5:00 PM
Northgate Mall, Highway I-5 & N.E. 110th St., Seattle
- Aug. 27 Rose Show
& 28 Sponsored by: Evergreen Rose Society
27th - 12:00 - 6:00 PM; 28th - 12:00 - 5:00 PM
Northgate Mall, Highway I-5 & N.E. 110th St., Seattle
- Sept. 3 Dahlia Show "Eleventh American Dahlia Society Show"
& 4 Sponsored by: Portland Dahlia Society and
Pacific Northwest Dahlia Conference
3rd - 11:00 AM - 9:00 PM; 4th - 11:00 AM - 6:00 PM
Masonic Temple, 1119 S.W. Park Ave., Portland
- Sept. 8 "Dahlias for Fun"
Sponsored by N.O.H.S.
12:00 Noon Monthly Program Meeting
11:30 - Displays, Exhibits, Other Horticultural Activities
Coffee Available
Pacific Science Center, Eames Theater, Seattle
- Sept. 10 Dahlia Show
& 11 Sponsored by: Puget Sound Dahlia Association
10th - 1:00 PM - 10:00 PM; 11th - 10:00 AM - 5:00 PM
Seattle Center Coliseum, North Court, Rainier Room
- Sept. 10 Rose Show
& 11 Sponsored by: Fort Vancouver Rose Society
10th - 10:00 AM - 6:00 PM; 11th - 12:00 - 4:00 PM
Clark College Auditorium, Vancouver, Washington
- Sept. 17 Dahlia Show
& 18 Sponsored by: Olympic Dahlia Society
17th - 4:00 PM - 9:00 PM; 18th - 9:00 AM - 4:30 PM
Peninsula Community College, Student Union Building
Port Angeles
- Sept. 21 First Annual Fall Festival - Plant Sale
& 22 Sponsored by: N.O.H.S.
21st - Preview - 5:00 PM - 7:00 PM - Admission \$1.00
22nd - 9:30 AM - 5:00 PM
New Union Bay Teaching & Research Arboretum, Seattle

CORNUS CANADENSIS

Altha Miller, Issaquah, Washington

Cornus canadensis, a small member of the *Cornaceae* family, is everything a woodland carpenter should be. It is usually found in humusy, moist, lime-free soils in forests and especially in logged-off areas of North America. It ranges from Canada south to New Mexico and northeastward to Greenland.

The three to eight-inch tall stems are topped by a whorl of four to six obovate leaves which are conspicuously veined. The numerous tiny greenish true flowers form a cluster on a short peduncle above the whorl of leaves and are surrounded by a showy circle of three to seven broad white bracts, giving the appearance of an attractive 'flower'. The blooms appear from May to August and are followed later (sometimes) by bright red drupes or 'berries' in a cluster, from which comes the common name of 'Bunch Berry'. In the fall the rich autumn tints of the foliage is an added attraction.

MONOTROPA UNIFLORA

Ben T. Briggs, Shelton, Washington

Finding Indian pipe, (*Monotropa uniflora*) in its native habitat is a delightful surprise, but to discover it, quite by accident, growing profusely on your own property is an unbelievable find! Part of our place is wooded (mainly Douglas fir) with lots of salal. About six or eight years ago, my wife, Mary and I took down some trees and grubbed out much of the salal in order to make room for rhododendrons. It was then that we discovered the large patch ... literally hundreds of white, waxy "pipes" in an area perhaps four or five feet across. Mary recalled having hung some of the black, dried-up stalks with seed capsules in that place some ten or so years earlier.

The place where the big patch was located was relatively inaccessible because of the brush. Our children had trails but not over that particular area.

It was at its best and most impressive when we first found it. Gradually it has failed until now there are only a few here and there. We supposed that the conditions for rhododendrons ... more moisture, light and a bit of fertilizer ... don't favor *Monotropa uniflora*. In the wild we always found them in dry rather shaded places.

There's not much chance that Indian pipe will become a rewarding plant in many gardens! But, if someone has a dry shaded corner that can be forgotten for ten years or so, it just might be possible to achieve success.

Editor's Note: We strongly recommend that plants of *Monotropa uniflora* not be collected from the wild. As Dr. and Mrs. Briggs found, it is possible to grow it from seed if you have the conditions described.

Petroglyphs, Polypods, & Polyps

Sue Olsen, Bellevue, Washington

Nine miles of trail for the naturalist of every persuasion extend in triangular fashion from Lake Ozette in Washington's most northwesterly limits. Taken counterclockwise, the excursion all seems mildly downhill (an illusion far more relaxing than those ventures that feel 100% straight up) and may be comfortably travelled by nature lovers of all ages, particularly if you bring rain gear.

It is possible to circuit the entire route in one day, even six hours for the hyper-hiker, but then it's possible to "do" seven European cities in seven days. For those who would linger, listen and abandon time, the harvest is abundant for both the senses and the intellect.

One begins at the Lake Ozette ranger station (where a descriptive pamphlet is available) along a visually restful trail flanked with hemlock, vacciniums, deer fern and a mossy verdure that can only be produced by Washington's seacoast weather. A sizeable portion of the trail is planked in concession to the muddier months, but is of no hindrance to the viewing of miniature life from mushrooms to wild-flowers.

Approximately halfway along this three mile stretch to the sea, one crosses a large clearing, the remains of a homesteading effort by a stalwart Scandinavian, Lars Ahlstrom, who toiled on this land from 1905 until his death at age 88 in 1960.

Continuing through the forest the sea reaches the ear before the eyes, but greets the latter with a splendor of stacks, islands and surf. At this point the traveler's perspective is from a clifftop with the lure of glass floats, concretions, agates, and tide pools 300 feet below. Water and primitive camping are available here.

I recommend a descent to the beach where extensive Indian excavations are being conducted one-half mile north by Washington State University. Discoveries are abundant in the area uniquely preserved by a mud slide several hundred years ago. Daily lectures are offered at the site during the summer.

More campsites await approximately one-fourth mile north of the digs under a forest canopy that may also be housing bald eagles. As one travels even farther north to the mouth of the Ozette River, low tide exposes beautiful pastel tide pools abundant with sea life. Wading and rock hounding (for concretions, in particular) are excellent low tide pastimes. The young and fearless (or chilless) may even enjoy an ocean dip.

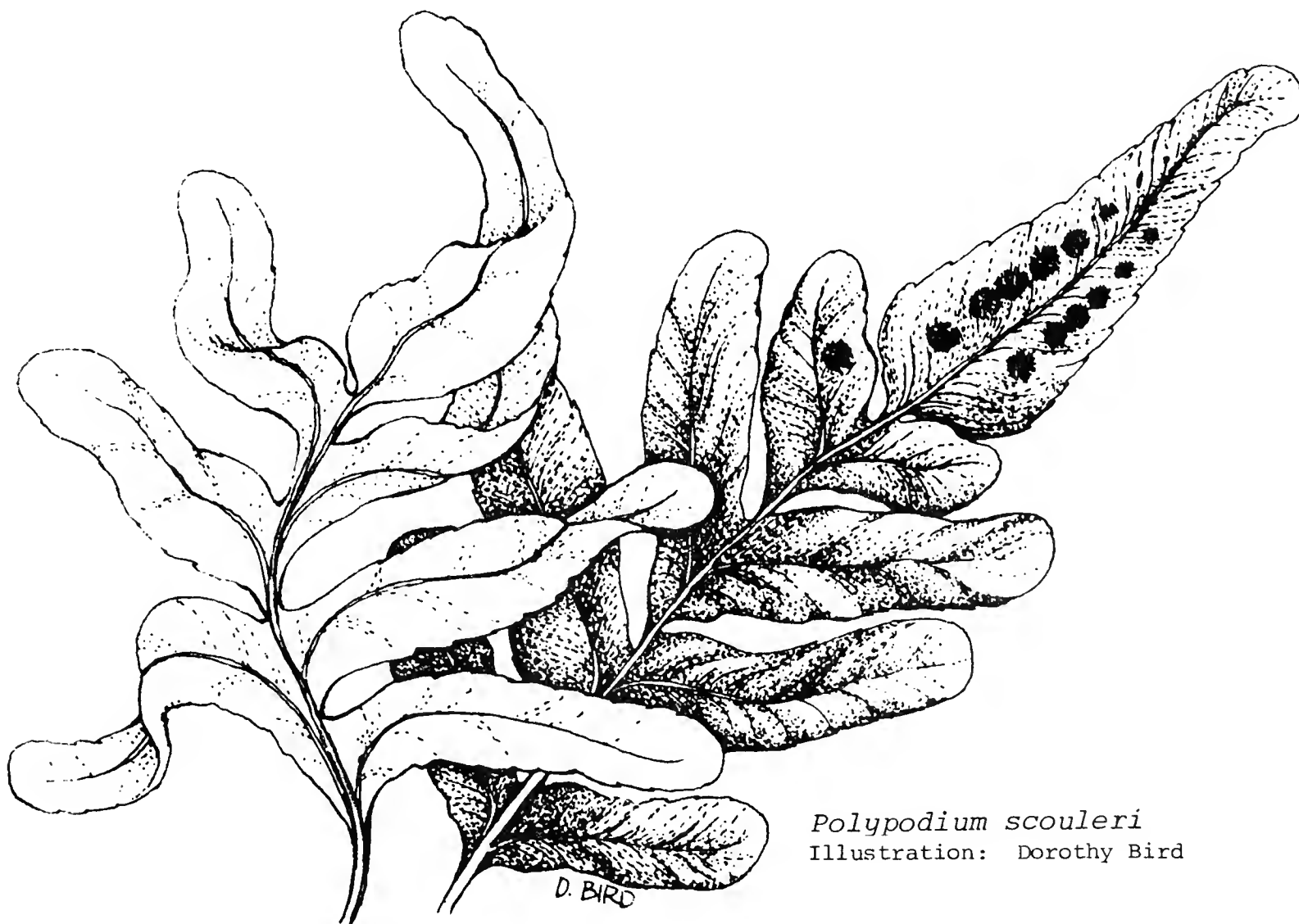
Heading south the hypotenuse of the trip traverses sand and rock beach to Sand Point. Indian petroglyphs depicting historical Indian life (whale hunting, etc.) are carved on the stone cliffs about mid-way. Adequate, if not entirely private camping is available at Sand Point and slightly beyond. Be prepared to

share with fellow humans, raccoons, and bears. While we saw none of the latter, we did take the recommended precaution of hanging our food clothesline fashion between the trees.

The final third of the journey is a gentle return through lush vegetation to Lake Ozette. Fortunately, there are ample way stations and natural compositions for reflection before returning to civilization.

For us, an exciting event of the trip was my first exposure to *Polypodium scolieri* growing in its limited seacoast habitat. Looking up in a wave excavated grotto, I found it sparkling and flourishing on the roots and trunk of a long-since storm felled spruce tree. Its gloss and rounded pinnae readily distinguish it from another native polypod (*P. glycyrrhiza*) which not only populates the coast but grows well inland. (Look for it on the trunks of *Acer macrophyllum* especially en route to Stevens Pass.)

Polypodium scolieri should not be collected lest it become one of our endangered species, but unlike many of Washington state's alpine ferns which steadfastly resist cultivation, it readily adapts to the woodland landscape with or without its host spruce tree. Polypodiums (English translation: many footed) spread slowly with a creeping rhizome which should never be buried, and send up their new fronds quite late in the season. In addition to brightening the woodlands, *Polypodium scolieri* has another asset. Nature has patterned its spore like golden drops on the underside of the frond. Take a look!



Polypodium scolieri
Illustration: Dorothy Bird

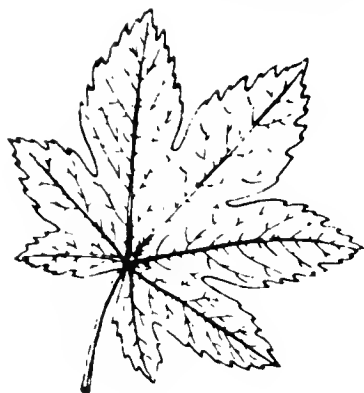
Growing & Propagation of Maples

A MISCELLANY OF NOTES ON THE GROWING AND PROPAGATION OF MAPLES

Milton Gaschk, Tacoma, Washington

PART III

FALL COLOR



No subject within the broad scope of growing maples is more confusing and less understood than in the undefinable factors associated with color formation in maple leaves.

Two ingredients are part of a complex chemical mixture that produce color; the yellow-gold pigments called carotenes, and the red-purple called anthocyanins. Both are present in leaves during the greater part of the growing season but are masked by the green of the sugar producing chlorophyll.

The sequence of events leading to color is usually associated with decreasing daylight or day-length, a sharp drop in temperature (frost) and bright sunny days. Chlorophyll production stops and the masking green disappears, revealing the various combinations of red and yellow pigments.

Nutrient movements within a tree continue to function at any time that soil temperatures remain above 35° F. In our mild Puget Sound climate where the transition from summer to fall and early winter is a gradual and drawn out process, leaf abscission may be delayed, permitting at least to a lesser degree, continued chlorophyll production. Thus, as long as the green coloring of the chlorophyll is present, the golds and reds remain hidden. In situations where a heavy mulch is used, the drop in soil temperature can be delayed considerably.

In the eastern region of the U.S. and Canada and in the higher elevations of the Blue Ridge and Great Smoky Mountains where the most spectacular fall foliage can be seen, there are years when during long periods of rainfall, colors fail to materialize. Research conducted by Dr. H. B. Tukey of Cornell University indicates that leaching of the water-soluble anthocyanin pigments from the leaf is probably the cause.

Surface leaf exposure to sunlight is certainly a consideration for good color. The more sun and perhaps heat, the greater the accumulation of sugars and in turn more pigments. Prolonged exposure of the tree to deep winter temperatures may be another factor.

A pot-grown specimen of *Acer japonicum* 'Vitifolium' with a history of good color was left in continual afternoon shade this summer. Later when color first began to show, it was moved into full sun, but failed to develop and match previous years' show.

There seems to be a suggestion in my garden that soil conditions influence fall color. In the areas where calcium has been added, better color is seen. However, this may be coincidental and more observations are needed.

Though somewhat unrelated, but may be of interest to mention, Geoffrey Smith, former superintendent of Harlow Car gardens at Harrogate, England, in his most fascinating book full of gardening anecdotes and suggestions, "Shrubs and Small Trees for your Garden", talks of adding magnesium limestone and sulphate of potash to *Parrotia persica* to induce fall coloring.

The Canyon maple (*Acer grandidentatum*) found throughout canyons of Utah and other inter-mountain regions of the west, grows in a decidedly alkaline soil, producing colors matching that of its distant eastern cousin, the Sugar maple (*A. saccharum*). There are situations where older and larger trees of this species do not color as well as younger ones. Those in moist situations may color as well as those in dry, all within visual distance of each other. How this species would perform and color in our more acid soils would be an interesting experiment.

Maples of the same species, growing side by side, with identical soil conditions, moisture and exposure, may show differences in color intensities or hues, or one may show good color, the neighbor may stay green.

All this only goes to raise more questions about this perplexing subject, with the answers perhaps hidden in the intricacies of genetics.

Interim Report of the Rhododendron Study Group

Marjorie Baird

The Northwest Ornamental Horticultural Society Rhododendron Study Group is involved in a most exciting and educational adventure. By invitation, we are planning and planting the North American area at the Rhododendron Species Foundation garden, located at the Weyerhaeuser Corporate Headquarters' 'plantation' at Federal Way. Other rhododendron-oriented groups are doing the same work on the other geographical areas where rhododendrons are native.

We began by doing some research, - first on the rhododendrons and azaleas of North America (there are 25 of them), and then on their companion plants. By making many trips to the garden we were able to get a fairly good number of species planted, with the help of Jack Hirsch, the Garden Manager, and his two gardeners, by the day of the Foundation's Annual Meeting, April 16th. Some of our plants came from the Species Foundation nursery. Some will have to be left there for another growing season or two. Many plants have been donated (tax deductible), for which we gave fervent thanks. The Experiment Station at Puyallup gave the Foundation a great number of species which they had been growing for experimental purposes for about 15 years. These, however, are quite leggy and will have to be cut back after flowering.

Blessings on Dorothy Hussey, our fellow-member landscape architect! She will keep our design 'on course' and see that we have a beautifully drawn plan. Mareen Kruckeberg, Betty Miller, and Margaret Mulligan will be our navigators for companion plants and ground covers; and who but Sue Olson would pilot us in the unfamiliar sea of ferns!

Be prepared, you propagators! We will soon be beaming S.O.S.'s at you. Besides ground covers, there are other plants we need badly: *Rhododendron macrophyllum*, *R. camtschaticum*, *Kalmia latifolia* and other species and varieties of native *Kalmia*, *Pachystima canbyi*, *P. myrsinitis*, *Pieris floribunda*, and others. If you would like to contribute any of the aforementioned plants here are the names of our group members whom you may contact: Mayde Ballinger, Janet Debney, Renee Hill, Betty Madison, Edna and Marshall Major (Bainbridge Island), Margaret Moss, and Jean Wilcox; my number 454-3862.

Our whole group feels very fortunate to have the singular opportunity to study the plants of our own continent, to see them, feel them, and create with them a garden of beauty which will grow more and more beautiful as the years go by!

Tidbits by Ladybug



There is no substitute for experience, knowledge gained through trial and error where gardeners learn practical "how to" methods that have proven valuable to them. Tidbits by Ladybug has been initiated to enable members to share with other members such information. In submitting your Tidbits do not be concerned with literary style; the ideas are the important thing. Ladybug will put them into appropriate form for publication.

Now is the time to divide plants of *Primula acaulis*, *P. polyantha*, *P. juliana* and other primroses that have finished blooming. Each offset that has new roots at the base of the leaf rosette can be cut from the main plant and placed in a moist, shady location for the summer months, then moved to a permanent location in late September. Cut away and discard the thick heavy roots connecting the individual rosettes as these sap the strength of the plant.



Altha Miller

Did you know that there is a bigeneric hybrid between *Ledum glandulosum* and *Rhododendron* 'Elizabeth'? It has been officially registered under the name *x Ledudendron* 'Brilliant'. It is described as low and spreading, attaining about 18 in. in height, has marvelous fall leaf coloring and the flowers are bright red. This was a new plant to my garden last year, a rooted cutting about 8 in. high. Two of its three branches had buds this spring and at this time of writing (May) is in bloom, the individual flowers much larger than I had anticipated. We will hope to have it available in the 'Collector's Corner' of the fall NOHS plant sale.

PUCKER-UP, SLUGS! Can't have a Lady Bug column without at least one more "sleg-getter". Someone gave me this over the phone and months later, when I came across the notes, I decided to try it. Fill your watering can with water in which you dissolve commercial quality powdered alum (available through your druggist in pound cans) at a ratio of one-half to one oz. of alum to a gallon of water. Apply around plants where slugs have been active or directly on the slugs when they come marching out at dusk. This formula has been checked out with the County Extension Service which said they did not know if it would work but they couldn't see any reason it would be harmful (except to the slugs). They checked with the Poison Center and the Audubon Society. They did caution that edible fruit and vegetables should be well rinsed before being eaten. One person who tried this formula said it left brown spots on lettuce, but it has not seemed to have this effect on primulas, cyclamen, narcissus etc. I tried it on field daffodils which had been nibbled down to the ground (caught the slugs at work) and since the application the leaves have grown five in. without being eaten further.

I'd appreciate it if anyone trying it would let me know results - good, bad, or indifferent.

Nan Ballard



The common garden plant *Rheum rhaponticum* L. or "Rhubarb" has long been known to have edible leaf petioles or stems, but poisonous leaf blades (see John M. Kingsbury, 1964, Poisonous Plants of the United States and Canada). The petioles have the acidic flavoring derived from malic acid whereas the leaf blade has citric and oxalic acids, the oxalic acid and soluble oxalates are present in sufficient quantities to be lethal.

The pesticide solution is prepared by boiling several large leaves in a gallon of water for approximately one hour. Strain solution carefully to remove all plant material. Cool and apply with an ordinary hand sprayer to aphid infected ornamental plant material. After 24 hours aphids turn red in color and soon die. There appears to be no residual effect and new infestations should be sprayed with newly prepared solution. No attempt has been made to test storage of the rhubarb solution. Sprayer equipment should be thoroughly cleaned with water after use and all excess rhubarb solution should be discarded to prevent ingestion by humans or domestic animals. Remember, you are using a natural poison.

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Davidsonia, Vol. 4, Number 4, Winter 1973

Ladybug



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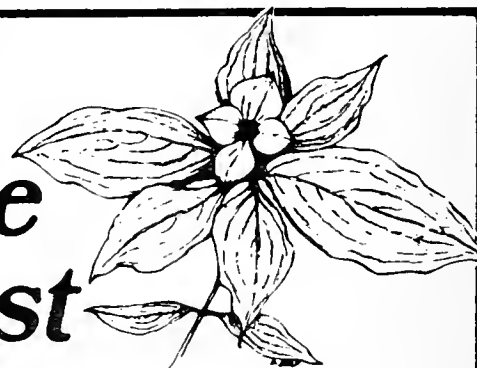
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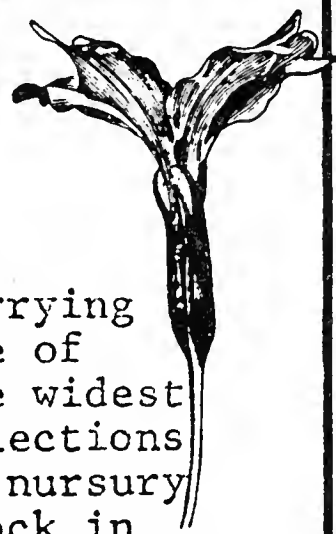
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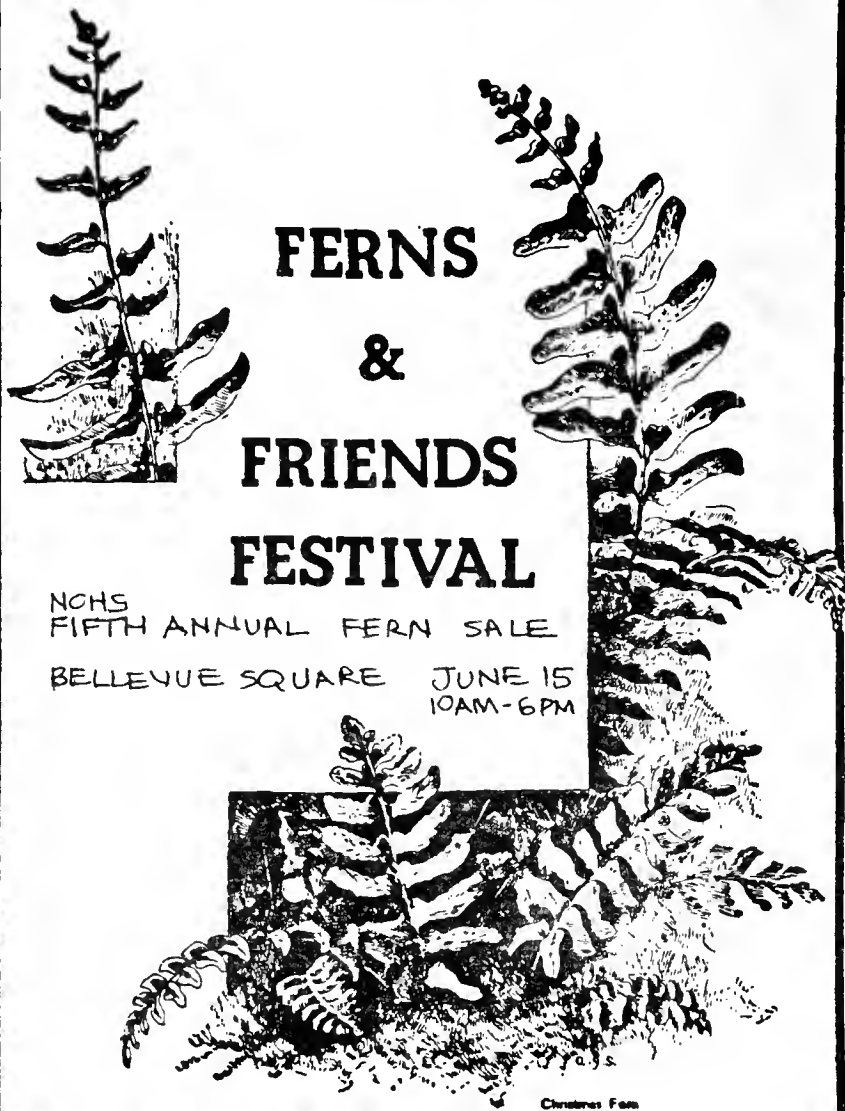


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